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A 12 month Observational study to see Clinical spectrum of Cardiorenal syndrome type 1 comparing distribution of subjects according to stages of AKI and length of hospital stay in ACS and ADHF group at health care center.

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Introduction:

Cardiorenal syndrome (CRS) type 1 is characterized as the development of acute kidney injury (AKI) and dysfunction in the patient with acute cardiac illness, most commonly acute decompensated heart failure (ADHF).

Type 1 CRS (acute CRS) occurs in approximately 25% to 33% of patients admitted with ADHF, depending on the criteria used, and represents an important consequence of hospitalization with a myriad of implications for diagnosis, prognosis, and management[1,2].

AKI is an independent risk factor for 1-year mortality in ADHF patients, including patients with ST-segment elevation myocardial infarction who develop signs and symptoms of HF or have a reduced left ventricular ejection fraction[3]. , AKI induced by primary cardiac dysfunction implies inadequate renal perfusion until proven otherwise [4]. This should prompt clinicians to consider the diagnosis of a low cardiac output state and/or marked increase in venous pressure leading to kidney congestion.

To our knowledge, no study has investigated the epidemiology of CRS type 1 in India. We conducted the present study to determine the clinical profile of Cardiorenal syndrome type 1, its clinical predictors, and its prognostic impact on in-hospital mortality in Dayanand Medical College and hospital, heart centre, Ludhiana (Punjab)

Methods

This was an observational study showing clinical profile of cardiorenal syndrome type 1 for 1 year.It was approved by institutional ethical committee.The Patients were initially cateogarised into two groups viz,Group ACS which included patients suffering from Acute coronary syndrome and Group ADHF(Acute decompensated heart failure) including patients with coronary artery disease,valvular heart disease,cardiogenic shock,atrial fibrillation and dilated cardiomyopathy.Patients on renal replacement therapy,sepsis,malignancy,end stage liver disease,chronic heart failureand contrast induced nephropathy were excluded from the study.

A detailed history including demographic data,length of hospital stay,history of presenting symptoms and premorbid conditions was taken on a predesigned proforma.

Total 350 patients were enrolled during observation period for which comparison amongst 2 groups was made. Serum creatinine,Glomerular filteration rate levels were recorded at the time of admission and subsequently at 48 hours.The data was analysed using statistical tests and statistical tools whenever and wherever required.

Result

Out of the 350 enrolled patients,180 (51.4%) were in ACS group while 170 (48.6%) were in ADHF group.

Table 1 showed that in ACS group,most of the subjects were in Stage 1 of AKI (334).Amongst them slight preponderance of subjects were in ACS Group (171) while 163 subjects of stage 1 were in ADHF group.

In stage 2,there were 14 (4%) subjects,which were equally distributed in both groups.

In stage 3,only 2 (0.57%) subjects were present, both of which were in ACS group.

The p value is insignificant.

Table 1: Distribution of subjects according to stages of AKI in ACS and ADHF group

As per AKI stage	Group				Total	
	ACS		ADHF			
	No.	%	No.	%	No.	%
Stage 1	171	95.00	163	95.88	334	95.43
Stage 2	7	3.89	7	4.12	14	4.00
Stage 3	2	1.11	0	0.00	2	0.57
Total	180	100.00	170	100.00	350	100.00
P value = 0.385						

(AKI:Acute Kidney injury)

Table 2 revealed that maximum number of patients has hospital stay between 6-10 days, 162 (46.29%). Longer hospital stay is observed in ACS group than ADHF group. Between 0-5, 6-10, 11-15 days nearly equal duration of hospital stay is observed in both groups, but >16 days longer hospital stay is observed in ACS group (20) than ADHF group (5).

Mean duration of hospital stay was slightly higher in ACS group i.e 8.3 ± 5.019 days than ADHF group i.e 7.37 ± 3.445 days.The p value is statistically significant.

The p value is significant.

Table 2: Distribution of subjects according to duration of hospital stay in ACS and ADHF group

Duration of Hospital stay (days)	Group				Total	
	ACS		ADHF			
	No.	%	No.	%	No.	%
0-4	64	35.56	60	35.29	124	35.43
5-8	78	43.33	84	49.41	162	46.29
9-15	20	11.11	21	12.35	41	11.71
16-20	14	7.78	4	2.35	18	5.14
More than 20	4	2.22	1	0.59	5	1.43
Total	180	100.00	170	100.00	350	100.00
Mean	8.36		7.37		7.88	
SD	5.019		3.445		4.349	
P value = .033*						

*indicates significant p value

Discussion

A large number of studies used the term 'worsening renal function' to describe changes in renal function occurring after ACS or ADHF, the incidence ranging between 29 and 72% for patients with ADHF[5,6,11] and between 11 and 19.5% for patients with ACS.[7-10] These wide ranges may be attributable to differences in the definitions used to determine worsening renal function and/or ethnic or geographical differences in the selected populations.

Many studies have evaluated the association of various predictors with the occurrence of AKI in ACS and ADHF patients, and age, ejection fraction, diabetes, hypertension, and chronic kidney disease have been reported as independent predictors of AKI.[6,9,12,13]

Most of these studies are secondary or post hoc analyses from large registry databases or clinical drug therapy trials and include a large number of patients.

Several studies have shown that the development of AKI is associated with prolonged hospital stay.[5,10] Interestingly, we observed that hospital stay was longer in ACS patients than in ADHF patients.[15]

A European prospective heart failure outcome study (POSH) reported that hospital stay was longer in Europe

than in the USA.This may result from different management strategies of diverse medical centers.[5]

Observational data from many studies have shown that AKI is associated with an increased risk for a poor outcome. Although a large number of studies focused on the long-term prognosis of AKI patients,[9,10,13], only a few studies reported on in-hospital mortality.[5,8] In our study, we observed that AKI had a marked impact on in hospital Mortality.

Our study showed that CRS type 1 was more prevalent in ACS (180 subjects) than ADHF, 170 subjects.[14]

The present study adds to the growing evidence that CRS is common among patients hospitalized for acute HF and that it is associated with worse prognosis, as reflected in longer hospital stay and higher mortality.[16,11,17,18] Nevertheless, it has yet to be fully clarified whether worsening renal function in itself contributes to increased mortality or whether it is merely a marker of more severe cardiac and/or renal dysfunction.[18]

We observed that majority of the patients are in stage 1 of AKI, 334 (95.4%), nearly equally distributed in both groups with only few patients in stage 2 and stage 3. This wide range may be attributed to the use of different definitions of AKI, differences in the observation period, and/or heterogeneity of the selected populations.

Our study has certain limitations.First,the history of previous medications (ACE inhibitors,beta blockers,aldosterone antagonists)and medication given during hospital course was not analysed.Secondly this was purely an observational study and the mechanisms of AKI and the most appropriate treatment options for these high risk patients were not assessed.

Although there are various possible therapeutic approaches to CRS, no randomized study has shown to have a positive impact on this complication.

Various studies, including clinical trials by the National Heart, Lung, and Blood Institute's Heart Failure Network(19) are underway to validate therapeutic strategies for these patients and to identify novel biomarkers of kidney damage that can be used for the early identification of patients at risk of developing CRS.

References

1. Ronco C, McCullough PA, Anker SD, et al., Acute Dialysis Quality Initiative (ADQI) Consensus Group. Cardiorenal syndromes: an executive summary from the Consensus Conference of the Acute Dialysis Quality Initiative (ADQI). Contrib Nephrol. 2010;165:54-67.
2. Hata N, Yokoyama S, Shinada T, et al. Acute kidney injury and outcomes in acute decompensated heart failure: evaluation of the RIFLE criteria in an acutely ill heart failure population. Eur J Heart Fail. 2010;12:32-7.
3. McCullough PA. Cardiorenal syndromes: pathophysiology to prevention. Int J Nephrol. 2010;2010:762590.
4. House AA, Anand I, Bellomo R, et al., for the Acute Dialysis Quality Initiative (ADQI) Consensus Group. Definition and classification of cardio-renal syndromes: workgroup statements from the 7th ADQI Consensus Conference. Nephrol Dial Transplant. 2010;25:1416-20.
5. Cowie MR, Komajda M, Murray-Thomas T, Underwood J, Ticho B. POSH Investigators: Prevalence and impact of worsening renal function in patients hospitalized with decompensated heart failure: results of the prospective outcomes study in heart failure (POSH). Eur Heart J. 2006;27: 1216-22.
6. Logeart D, Tabet JY, Hittinger L, Thabut G, Jourdain P, Maison P, et al. Transient worsening of renal

function during hospitalization for acute heart failure alters outcome. Int J Cardiol. 2008;127:228-32.

7. Lazaros G, Tsiachris D, Tousoulis D, Patialiakas A, Dimitriadis K, Roussos D, et al. In-hospital worsening renal function is an independent predictor of one-year mortality in patients with acute myocardial infarction. Int J Cardiol 2012;155(1):97-101.
8. Goldberg A, Hammerman H, Petcherski S, Zdorovyak A, Yalonetsky S, Kapeliovich M, et al. Inhospital and 1-year mortality of patients who develop worsening renal function following acute ST-elevation myocardial infarction. Am Heart J. 2005; 150: 330-37.
9. Amin AP, Spertus JA, Reid KJ, Lan X, Buchanan DM, Decker C, et al: The prognostic importance of worsening renal function during an acute myocardial infarction on long-term mortality. Am Heart J. 2010;16:1065–71.
10. Parikh CR, Coca SG, Wang Y, Masoudi FA, Krumholz HM. Long-term prognosis of acute kidney injury after acute myocardial infarction. Arch Intern Med. 2008;168:987–95.
11. Gottlieb SS, Abraham W, Butler J, et al. The prognostic importance of different definitions of worsening renal function in congestive heart failure. J Card Fail 2002; 8:136.
12. Mielniczuk LM, Pfeffer MA, Lewis EF, Blazing MA, de Lemos JA, Mohanavelu S, et al. Acute decline in renal function, inflammation, and cardiovascular risk after an acute coronary syndrome. Clin J Am Soc Nephrol 2009; 4: 1811–1817.
13. Metra M, Nodari S, Parrinello G, Bordonali T, Bugatti S, Danesi R, Fontanella B, Lombardi C, Milani P, Verzura G, Cotter G, Dittrich H, Massie BM, Dei Cas L. Worsening renal function in patients hospitalised for acute heart failure: clinical implications and prognostic significance. Eur J Heart Fail. 2008;10:188-95.
14. Eren Z, Ozveren O, Buvukoner E, Kaspar E, Degertekin M, Kantarci G. A Single-Centre Study of Acute Cardiorenal Syndrome: Incidence,Risk Factors and Consequences. Cardiorenal Med. 2012;2:168-76.
15. Nohria A, Hasselblad V, Stebbins A, Pauly DF, Fonarow GC, Shah M, et al: Cardiorenal interactions: insights from the ESCAPE trial. J Am Coll Cardiol. 2008;51:1268-74.
16. Akhter MW, Aronson D, Bitar F, et al. Effect of elevated admission serum creatinine and its worsening on outcome in hospitalized patients with decompensated heart failure. Am J Cardiol 2004; 94:957.
17. Krumholz HM, Chen YT, Vaccarino V, Wang Y, Radford MJ, Bradford WD, et al. Correlates and impact on outcomes of worsening renal function in patients > or =65 years of age with heart failure. Am J Cardiol. 2000;85:1110-3.
18. Forman DE, Butler J, Wang Y, Abraham WT, O'Connor CM, Gottlieb SS, et al. Incidence, predictors at admission, and impact of worsening renal function among patients hospitalized with heart failure. J Am Coll Cardiol. 2004;43:61-7.
19. Heart Failure Network. Available at http://www.hfnetwork.org